

List of Claims:

Claims 1-15 (Cancelled)

Claim 16 (Original): A method of generating digital images having improved dynamic range comprising:

collecting a charge in a photodetector by exposing the photodetector with photons for a first predetermined period of time;

comparing the charge to a predetermined value;

if the charge is greater than or equal to the predetermined value, storing a digital voltage value corresponding to the charge; and

if the charge is less than the predetermined value, collecting additional charge in the photodetector by re-exposing the photodetector for a new period of time.

Claim 17 (Original): The method of claim 16 further including non-destructively reading the charge.

Claim 18 (Original): The method of claim 17 further including normalizing the digital voltage value to generate a normalized voltage value.

Claim 19 (Original): The method of claim 18 wherein the step of storing comprises storing the normalized digital value.

Claim 20 (Original): The method of claim 19 wherein the step of storing further comprises storing the normalized voltage value in a location in a frame memory.

Claim 21 (Original): The method of claim 20 further including clearing the location in the frame memory before collecting the charge.

Claim 22 (Original): The method of claim 21 wherein the step of storing the normalized voltage value in the location in the frame memory comprises storing the normalized voltage

value in the location in the frame memory only if the location in the frame memory is blank.

Claim 23 (Original): The method of claim 22 further including incrementing an index number before collecting additional charge in the photodetector.

Claim 24 (Original): The method of claim 23 wherein the normalizing step comprises shifting the digital voltage value to the right by a predetermined number of bits.

Claim 25 (Original): The method of claim 24 wherein the normalizing step comprises shifting the digital voltage value to the right by a number of bits equal to the index number.

Claim 26 (Original): The method of claim 25 further including storing the normalized voltage value, if the charge is less than the predetermined value, and if the index number is greater than a predetermined index value.

Claim 27 (Original): The method of claim 25 further including storing the normalized voltage value, if the charge is less than the predetermined value, and if the index number is greater than a width of the location in the frame memory.

Claim 28 (Original): The method of claim 19 wherein the step of collecting additional charge comprises re-exposing the photodetector with photons for a period of time equal to

$$x * 2^{(N-1)}$$

where x is equal to the first predetermined period of time and N is equal to the index number.

Claims 29-32 (Cancelled)

Claim 33 (Original): A system for generating digital images having improved dynamic range comprising:

means for collecting a charge in a photodetector by exposing the photodetector with photons for a first predetermined period of time;

means for comparing the charge to a predetermined value;
means for storing a digital voltage value corresponding to the charge if the charge is greater than or equal to the predetermined value; and
means for collecting additional charge in the photodetector by re-exposing the photodetector for a new period of time if the charge is less than the predetermined value.

Claim 34 (Original): The system of claim 33 further including means for non-destructively reading the charge.

Claim 35 (Original): The method of claim 34 further including means for normalizing the digital voltage value to generate a normalized voltage value.